

Records of *Trichoplusia ni* (HÜBNER, 1803) and *Autographa gamma* (LINNAEUS, 1758) in Sombor and Čelarevo (Serbia) from 1994 to 2015

(Lepidoptera, Noctuidae)

by

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received 12.I.2016

Summary: Records on findings of *Trichoplusia ni* (HÜBNER, 1803) and *Autographa gamma* (LINNAEUS, 1758) in Sombor and Čelarevo are presented and data analyzed. Specimens were collected using light trap model RO Agrobečej, with a 250W mercury bulb. The light trap was operated on a daily basis from the beginning of April to the middle October each year. The light trap in Sombor is in operation since 1994, the other one in Čelarevo since 2008. The major outbreak of *T. ni* (HBN.) and *A. gamma* (L.) has been recorded in 2015 in both localities, in Sombor and Čelarevo.

Introduction: *Trichoplusia ni* (HÜBNER, 1803) and *Autographa gamma* (LINNAEUS, 1758) are species regularly recorded in Serbia. *Trichoplusia ni* (HBN.) was recorded at these localities: Sombor, Petnica (VAJGAND, 1991), Užice, Tara (DODOK, 2003), Zaječar, Rudna glava, Radujevac (ZEČEVIĆ, 2002), Ravno Bučje, Prizren, Vitimirica (VASIĆ, 2002), Ovčar, Vranjska banja, Vrčin (HRIC, 2016). *Autographa gamma* (L.) was found on all explored locations in Serbia, and is the most recorded moth of the Noctuidae family in Serbia (VASIĆ, 2002; HRIC, 2016). Worldwide, especially in the tropics, these species are known for their outbreaks and have bad reputation as pests on many cultivated plants. Both species are also known to be migrants (EITSCHBERGER et al., 1991). The outbreak of *A. gamma* (L.) was recorded in Sombor in 2001 (VAJGAND, 2010a). Between June 14th and July 1st of that year 1648 specimens were recorded, equivalent to six years in average!

Unusually a large number of both species was recorded in 2015, and it can be attributed to migrations. The number of specimens, recorded at light traps, have been presented here and compared with data from previous years (VAJGAND, 2010b, 2010c, 2012).

Method: The light trap model RO Agrobečej is used for tracking and forecasting outbreaks of species significant for agriculture, since 1994 in Sombor and since 2008 in Čelarevo. As light source a mercury bulb with a power of 250 W was used. The Sombor light trap is located in the southern suburb, within the UTM square marked CR56, the other one is located north of Čelarevo, in the UTM square CR81. In 2015, light trap collecting was started from April 10th to October 13th. Insects, collected in the trap, were killed by dichlorvos and daily taken to the Agroprotekt Laboratory for determination, by using FORSTER & WOHLFAHRT (1980) and RAKOSY (1996).

Trichoplusia ni (HÜBNER, 1803) - Cabbage looper

At both localities the species was recorded on average in one of every two years. Highest number of annually recorded specimens is 25 for both localities, and that occurred in Čelarevo in 2009, and in Sombor in 2006 (fig. 1). The biggest record value for one night is 4 specimens.

There were no records of this species in Čelarevo for four consecutive years. In the previous years, moths were recorded between June 12 and September 10. There were one or two specimens per night, except for August 11th and 13th, 2008 when 3 and 4 specimens were caught, respectively.

In 2015 first specimens in Čelarevo have been recorded on May 18th - 2 specimens, and May 20th - 1 specimen (fig. 2). That is 20 days earlier than this species were ever recorded in Vojvodina, and among earliest records for Serbia. The species continued to appear on June 12th. From that date to July 13th, the species was recorded almost every night. Number per night reached 9 specimens on July 2nd - and that is the highest number since 1994. Afterwards, until August 30th mostly no specimens of both species were collected, only in few nights 1 or 2 were caught.

In Sombor, in previous years, these moths were recorded from June 8th to September 29th, usually one specimen per night. Only on two days there were more specimens - 3 in July 14th 2006, and 4 in July 22nd 2006.

In 2015, the first specimen of this species was also recorded May 18th. The moths continued to appear until June 23rd and then, mostly each night until July 6th. Most specimens per night (4) were caught on June 29th. After the mentioned period, another four specimens were recorded: July 17th - 1, July 29th - 2 and August 9th - 1.

If peaks of activity in 2015 are compared to the average for previous years (fig. 2), it is evident that the number of records started to rise some 15 to 20 days earlier!

If two localities are compared, numbers of records in Čelarevo exceed those of Sombor, implying migration was more directed towards that area.

Autographa gamma (LINNAEUS, 1758) - Silver Y moth

In the previous period, in Sombor and Čelarevo combined, between 21 to 468 specimens (fig. 3). An exception is the year 2001 in Sombor when, due to migration, there were 2198 records! Usually between 1 and 5 specimens are

recorded per night over the period from April 14th to October 23rd. During 2015, in Čelarevo there were altogether 517 specimens of this species (the average used to be 142), and 109 in Sombor (the average is 254). Silver Y is a migratory species, which has occasional outbreaks in the researched region. Migrations were local in nature, as can be seen from collected data. The species appeared in Čelarevo on May 9th, and in Sombor on May 15th. In the period that finished on June 9th in Čelarevo and on June 15th in Sombor, at both localities single specimens were recorded with short or long breaks, quite similar to historical records (fig. 4). After that, the number of specimens in Sombor rose slightly, so between June 16th and June 20th, 32 specimens were caught, with a peak on June 18th. In Čelarevo, the number of specimens rose on June 10th, so the number of specimens per night first rose up to 22, and then to 94 specimens on June 15th. Afterwards, the number decreased to few specimens usually. There were 278 specimens in only four days, and that figure exceeds the majority of annual totals!

The species was recorded in Sombor all the way to October 9th, with short or long breaks over summer. Records per night show common values between 1 and 4.

In Čelarevo, on the other hand, species was recorded to October 13th with number of records per night somewhat above the normal, but rarely more than 5 specimens in a night. The data obtained show another peak July 23rd with 13 specimens, and more than normal between August 22nd and 24th, with local peak August 22nd with 5 specimens. The migration was more directed towards Čelarevo than towards Sombor.

Conclusion: The number of collected specimens of *T. ni* (HBN.) and *A. gamma* (L.), using light traps, shows migration on a large scale in south Bačka region. Consequences of migration of Silver Y moth have been evident, mostly in central and southern Bačka. Most caterpillars have been found on soyabeans, but were numerous also on sunflowers. Neither migration nor Cabbage looper moths were thoroughly researched in the field, because of suppression measures applied. Numbers above average were noticed for other migratory species, like *Heliothis peltigera* (DENIS & SCHIFFERÜLLER, 1775) or *Vanessa cardui* (LINNAEUS, 1758). Caterpillars of the Silver Y moth have been suppressed during 2015 on several hundred hectares with soyabean planted. In some cases suppression measures were justified, but elsewhere suppression was done out of fear, since economic threshold of harm, judging by our experience with soyabeans, is when number of caterpillars exceeds one caterpillar per plant.

Acknowledgement: We would like to thank VLADIMIR SABADOŠ, ŽIVICA RADIN, GORDANA FORGIĆ and MILKA TOŠEV (of Agroinstitut Company - nowadays Agriculture Expert Service) for enabling access to the moths collected between 1994 and 2007 in their light trap, to DEJAN ZDRAVKOVIĆ, JAROSLAV SUPEK (from Agrimatco Dipkom) and NEMANJA RAIĆ for their help in taking moths out of the traps, to DEJAN ĐURIŠIĆ (from Betacorn) who provided location for the light trap and to STEVAN ŠIŠKOVIĆ for supplying the light trap.

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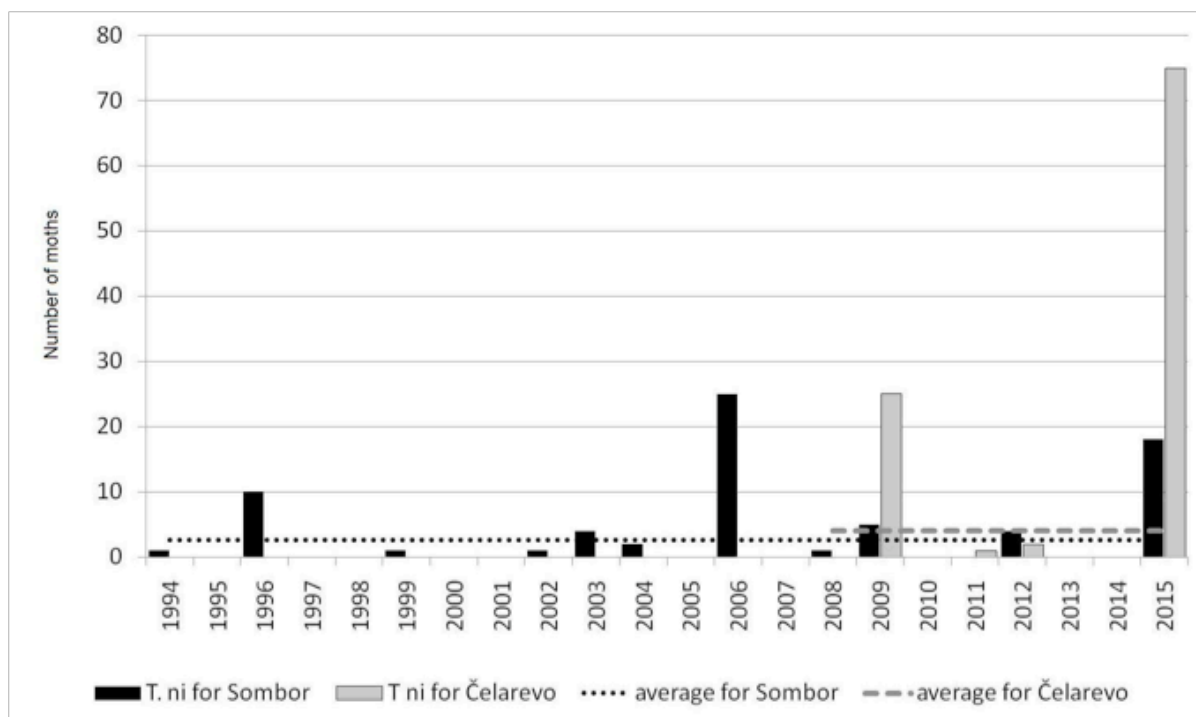


Fig 1: Number of *Trichoplusia ni* (HÜBNER, 1803) per year.

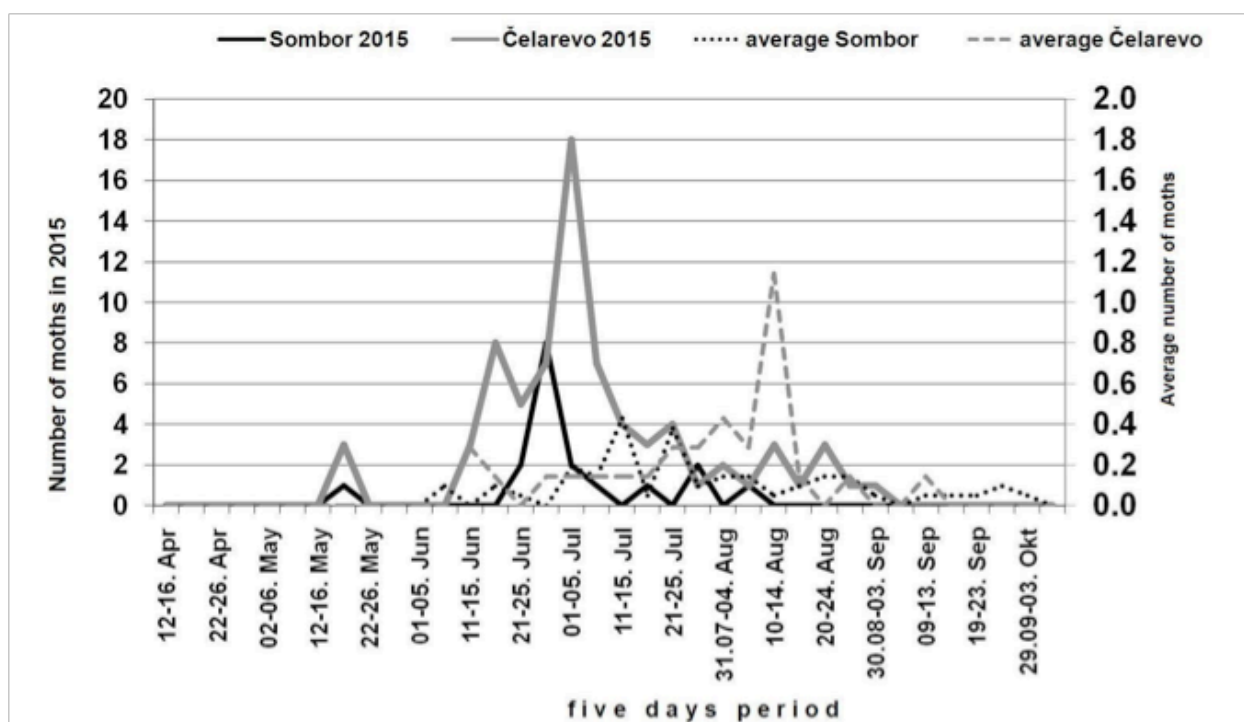


Fig 2: Flight dynamic of *Trichoplusia ni* (HÜBNER, 1803) per five days period.

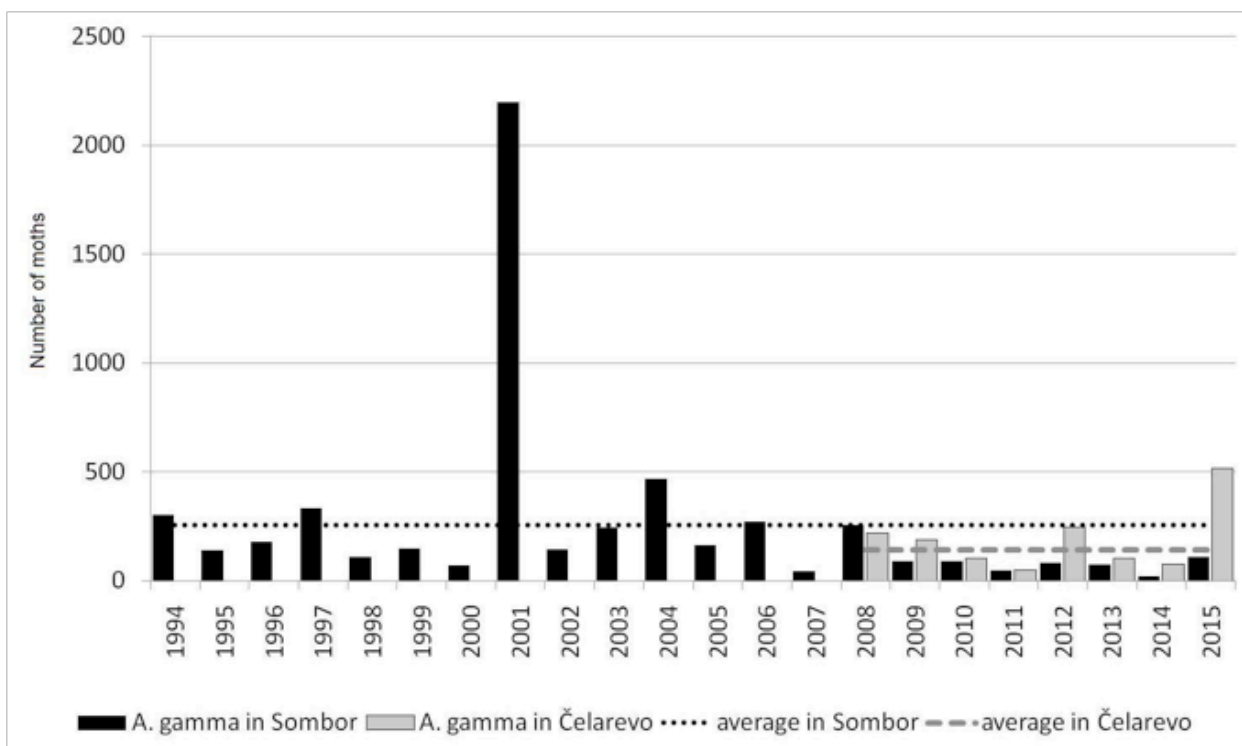


Fig 3. Number of *Autographa gamma* (LINNAEUS, 1758) per year.

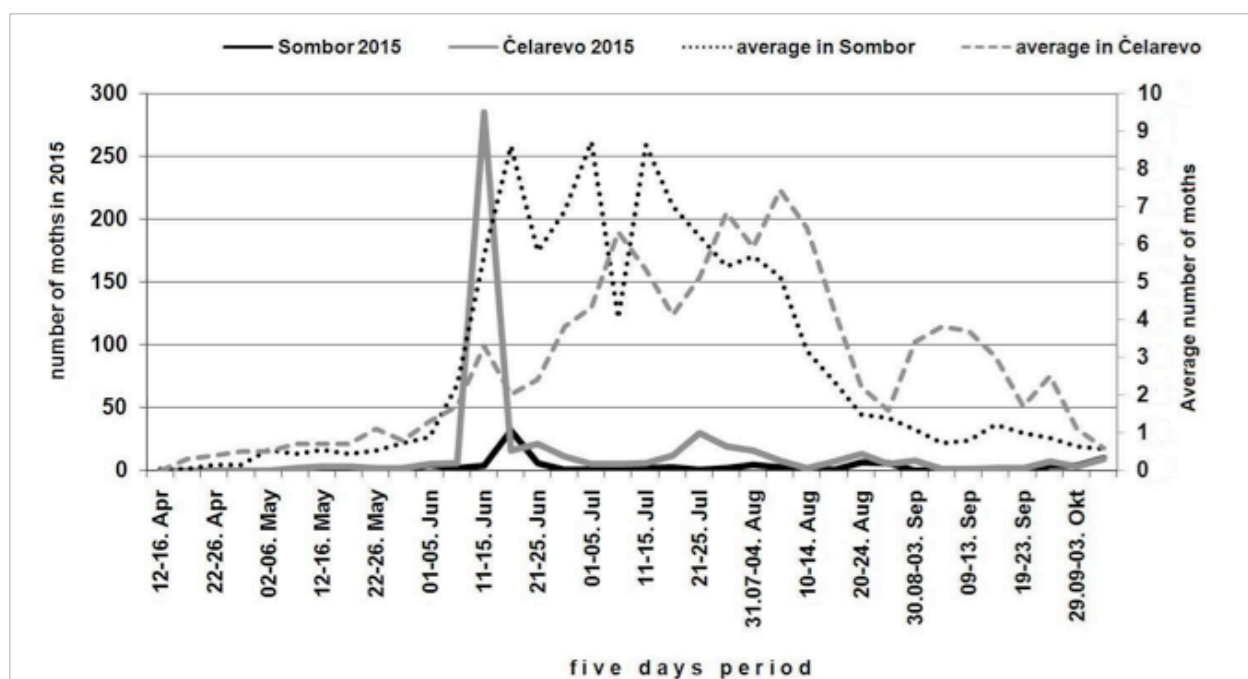


Fig 4: Flight dynamic of *Autographa gamma* (LINNAEUS, 1758) per five days period